UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

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CHRISTOPHER NOEL, SIMI LINTON,
UNITED SPINAL, a nonprofit organization,   :
THE TAXIS FOR ALL CAMPAIGN, a   Case no. 11 CV 0237 (GBD)
nonprofit organization, 504 DEMOCRATIC   :
CLUB, a nonprofit organization, DISABLED
IN ACTION, a nonprofit organization   :

                        Plaintiffs,   :   **DECLARATION OF DOUGLAS
KRUSE**

           -against-   :

NEW YORK CITY TAXI AND   :
LIMOUSINE COMMISSION, a charter
mandated agency, and DAVID YASSKY, in   :
his official capacity as chairman and
commissioner of the New York City Taxi   :
and Limousine Commission,

                               :

                 Defendants.

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I, Douglas Kruse, declare:

1.   I submit this Declaration in support of Plaintiffs' Motion for Summary Judgment. I have personal knowledge of the facts contained in this declaration and, if called as a witness, am competent to testify competently to these facts, except as to matters expressly stated to be upon opinion and belief, and as to those, I believe them to be true.

Principal Findings

1.   A non-disabled person is over 25 times more likely to hail a taxicab within 10 minutes than is a person who uses a wheelchair.

2.   In my professional opinion, a taxicab fleet where only 232 out of over 13,000 taxicabs are accessible is, for all practical purposes, not accessible at all.

Professional Qualifications and Experience

3.   I received my Bachelors Degree in Economics from Harvard University in 1981, my Masters Degree in Economics and Certification in Public Policy Analysis and Program Evaluation from the University of Nebraska-Lincoln in 1983. I went on to receive my Ph.D. in Economics from Harvard University in 1988. I am currently employed as Professor and Director of the Ph.D. program in Industrial Relations and Human Resources at Rutgers University School of Management and Labor Relations.

4.   In this position I am responsible for overseeing Rutgers University's Ph.D. program in Industrial Relations and Human Resources, designing exam committees and overseeing doctoral students in their coursework, exams and dissertations. I have been employed at Rutgers University since 1988. I received tenure in 1994 when I became an

Associate Professor. In 2000 I was elevated to full Professor and in 2007 became Director of the Ph.D. program. In my research I conduct econometric studies on disability, employee ownership, profit sharing, worker displacement, pensions and wage differentials. A copy of my résumé is attached as **Exhibit A**.

5. Prior to receiving my Ph.D. I worked as a Teaching Assistant in the Department of Economics at Harvard University from 1986 to 1988. Prior to that I was employed as an Economic Development Consultant in the State of Nebraska's Department of Economic Development.

6. I currently serve as a member on the State Rehabilitation Advisory Council, New Jersey Division of Vocational Rehabilitation and was appointed to that position in 1999. I became an editor of the *British Journal of Industrial Relations* starting in 2011, and am also a member of the Board of Reviewers of *Industrial Relations* and have been since 1999. In 1998 I was appointed to the President's Committee on Employment of People with Disabilities, Subcommittee on Employment Disability Concerns, and served on that Committee until 2000.

7. I have testified four times before Congress on my economic research and have conducted several studies for the U.S. Department of Labor and the U.S. Department of Education's National Institute on Disability and Rehabilitation Research, including a report on Disability and Employment: Characteristics of Employed and Non-employed People with Disabilities prepared in 1997 for the U.S. Department of Labor, Office of Policy.

8. I have authored numerous books, articles, working papers and manuscripts regarding economics, employment and disability. Some of my key recent publications in

this area have been: "Projecting Potential Demand for Workers with Disabilities" (2010); "Is Disability Disabling in All Workplaces? Workplace Disparities and Corporate Culture" (2009); "Employment of People with Disabilities: Report to the National Council on Disability" (2007); "Corporate Culture and the Employment of People with Disabilities" (2005); "Employment of People with Disabilities Following the ADA" (2003); and "Spinal Cord Injury: An Analysis of Medical and Social Costs" (1998). I have also given over forty presentations on these subjects. Almost all of the research in my published books and articles is based on statistical analysis of large datasets, using state-of-the-art statistical techniques.

Consultation in This Matter

9.   Plaintiffs' counsel have retained me to provide expert analysis on the following topics:

        a. The probability of hailing an accessible taxicab within a given time
            period in New York City; and

        b. Statistics related to the intersection of employment of people with
            disabilities and access to transportation.

10.   In forming the opinions I have reached in this case, I have reviewed the following: the pleadings filed by the parties; the transcript from the deposition of Ashwini Chhabra; and various publicly available documents and reports regarding taxi accessibility in New York City. A complete list of all documents reviewed for the purposes of this declaration is attached as **Exhibit B**. My opinions are also based on my two decades of experience as a statistician and economist and my extensive research on

the topics of economics, employment and disability. In addition to this declaration, I have prepared a report summarizing my conclusions which was produced to Defendants on August 26, 2011.

Findings

Likelihood of a Successfully Hailing an Accessible Taxicab

11.   Currently, 232 taxicabs out of 13,237 are accessible, a percentage of 1.8%, leaving 13,005 taxicabs inaccessible to persons with disabilities. In addition, people with disabilities face competition for the few accessible taxicabs that do exist. This is because (1) the 1.8% of accessible cabs may be used by a non-disabled person while (2) a wheelchair user cannot access the 98.2% of inaccessible taxicabs. Thus, at any given time a certain percentage of the accessible taxicabs may be in use by persons without disabilities. Even without the detailed statistical analysis below, I can say that for the foregoing reasons, a taxicab fleet which has only 232 accessible taxicabs which may be used by wheelchair users is a fleet which is, for all practical purposes, not accessible at all.

12.   The time required to hail an accessible taxicab in New York City, and the probability of hailing an accessible taxicab within a given time period, can be estimated using information on a) the average time required to hail any taxicab, and b) the percentage of taxicabs that are wheelchair accessible. The only available information on (a) is from a study of hailing times in Manhattan that is summarized in the New York City Taxicab Fact Book[1]:

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[1] New York City Taxicab Fact Book. Brooklyn, NY: Schaller Consulting, March 2006. Plaintiffs' counsel has informed me that the Taxi and Limousine Commission denies possessing any information regarding the

Table 1		
Location	Time of day	Number of taxis stopping in half hour
Overall	Average across day	5.6
Midtown core	7-10 am	0
Midtown core	10 am-5 pm	7
Midtown core	5-7 pm	3.2
Midtown core	7-11 pm	11.6
Other midtown	7-10 am	9.2
Other midtown	10 am-5 pm	5.3
Other midtown	5-7 pm	1.5
Other midtown	7-11 pm	8.1

The only information on (b) is the total number of accessible taxicabs in the City's taxicab fleet which is 232, representing 1.8% of all taxicabs. The analysis assumes that 1.8% of the taxicabs in operation at any given time are accessible, the accessible and non-accessible taxicabs are equally available to pick up riders, the drivers of accessible taxicabs are as willing to pick up wheelchair users as they are to pick up other riders, the wheelchair ramps are adequately maintained and working, and the drivers are able to properly operate the wheelchair ramps.

13.   The above information can be used to create a distribution of wait times until a taxicab is successfully hailed. The probability of a successful hail in any given minute is estimated as the number of taxicabs stopping in a half hour divided by 30.

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number of taxicabs in operation at any given time and also denies possessing any information regarding the number of accessible taxicabs in operation at any given time. The Taxi and Limousine Commission has also denied possessing any information regarding the average length of time it takes to hail a taxicab. In light of this I have based my analysis on the information contained in the New York City Taxicab Fact Book, which appears to be the only source of information regarding hailing times and availability of taxicabs. For purposes of my analysis I also assume that of the taxicabs in operation at any given time 1.8% are accessible.

These probabilities combine to form a binomial distribution, which can be used to calculate the likelihood of a successful hail within a given time period, and the average time until a successful hail.

14.   My analysis of the overall likelihood of hailing an accessible taxicab versus an inaccessible taxicab within various time frames, including 10 minutes, 30 minutes, 1 hour and 2 hours, is contained in Table 2, below.
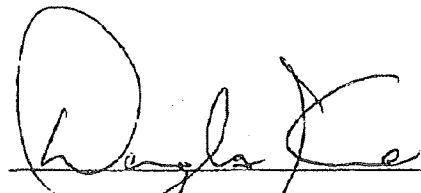
Table 2								
Likelihood of Successfully Hailing A Taxicab								
		Within 10 minutes		**Within 30 minutes**		**Within 1 hour**		**Within 2 hours**	
Location	Time of day	Any taxicab	Accessible taxicab	Any taxicab	Accessible taxicab	Any taxicab	Accessible taxi	Any taxicab	Accessible taxicab
Manhattan	Average across day	87.33%	3.31%	99.80%	9.60%	99.99%	18.29%	99.99%	33.23%

15.   A non-disabled person is over 25 times more likely to hail a taxicab within 10 minutes than is a person who uses a wheelchair. Table 2 shows that the overall likelihood of a non-disabled person being able to hail a taxicab they can access is 87.33% within 10 minutes. In comparison the likelihood of a wheelchair-user being able to hail an accessible taxicab within 10 minutes is 3.31%. If you are the gambling type, this means that you are only slightly more likely to be able to hail an accessible taxicab in New York City within 10 minutes than you are to win at roulette, where the odds of winning by placing a random bet on any one number is 2.63%.

16.   Wheelchair users are almost certainly aware of these odds and of the fact that taxicab service is predominantly inaccessible. In my opinion, when people are aware of the fact that the probability of finding an available accessible taxicab is this low they are likely, as any sensible person would be, to not even try hailing an accessible taxicab.

I declare under penalty of perjury that the foregoing is true and correct.

Executed at Somerset, New Jersey on August 23 2011.

Douglas Kruse